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| **Course code** | CC6 |
| **Type and description** |  |
| **ECTS credit** | 1 |
| **Course name** | **Applied Functional Analysis 2** |
| **Course name in Polish** | **Stosowana analiza funkcjonalna 2** |
| **Language of instruction** | English |
| **Course level** | 8 PRK |
| **Course coordinator**  | **Bogdan Przeradzki** |
| **Course instructors** | **Jacek Jachymski and Bogdan Przeradzki** |
| **Delivery methods and course duration** |

|  | **Lecture** | **Tutorials** | **Laboratory** | **Project** | **Seminar** | **Other** | **Total of teaching hours during semester** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Contact hours | 15 | 0 | 0 | 0 | 0 | 0 | 15 |
| E-learning | No | No | No | No | No | No |  |
| Assessment criteria (weightage) | 1,00 |  |  |  |  | 0,00 |  |

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| **Course objective** | 1. Acquiring knowledge In the field of Sobolev spaces and their applications to differential equations.2. Acquiring knowledge In the field of spectra theory with applications to differentia operators and Bondary value problems.  |
| **Learning outcomes** | After the course a student is able to:1. search the spectrum of linear operators, especially differentia ones – outcomes W1, U2, K12. look for solutions to BVPs by using Spectral Theory – outcomes W2, U1, K1-K33. search regularity of solutions to differentia equations - outcomes U1, K1-K34. look for solutions to BVPs by using Fourier transform – outcomes W2, U1, K1-K3 |
| **Assessment methods** | Outcomes W1-2, U1-2 –oralexam |
| **Prerequisites** |  |
| **Course content with delivery methods** | 1. Sobolev spacer, embeddingtheorems.
2. Basic knowledge on Schwartz’s and tempered distributions. Fourier transform.
3. Spectrum of linear operators In Banach spaces.
4. Spectral Theorem for selfadjoint operators bouded and unbounded.
5. Applications of the spectral theory to differential operators.
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| **Basic reference materials** | 1. Lecturer’s materials,2.A. Bressan, Lecture Notes In Functional Analysis, American Mathematical Society, ProvidenceRI 2013.3.J. Conway, A Course In Functional Analysis, Springer-Verlag, New York 1990.4.W. Rudin, Analiza funkcjonalna, PWN, Warszawa 2018. |
| **Other reference materials** | K. Yosida, Functional Analysis, Springer-Verlag, Berlin 1980. |
| **Average student workload outside classroom** | 10  |
| **Comments** |  |
| **Last update** |  |